Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Lake Charles Cogeneration, LLC
Lake Charles Gasification Facility
Lake Charles, Calcasieu Parish, Louisiana
Agency Interest Number: 160213
Activity Number: PER20080001
Proposed Permit Number: 5220-00411-V0

I. APPLICANT

Company:
Lake Charles Cogeneration, LLC
315 Park Avenue South, 20th Floor
New York, NY 10010-3607

Facility:
Lake Charles Gasification Facility
LA Highway 108, Lake Charles, Calcasieu Parish, Louisiana
UTM Coordinates: 470.40 kilometers East and 3339.50 kilometers North, Zone 15.

II. FACILITY AND CURRENT PERMIT STATUS

Lake Charles Cogeneration, LLC proposed to construct the Lake Charles Gasification Facility near Lake Charles, Calcasieu Parish. The facility is to convert petroleum coke to methane (substitute natural gas or SNG), sulfuric acid, and other products.

The proposed facility is classified as a major source under the Part 70 operating permit program and the New Source review (NSR) – Prevention of Significant Deterioration (PSD) program. A Title V permit and a PSD permit are required.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application dated September 2, 2008 and additional information dated November 4, 2008 were submitted requesting a Part 70 operating permit.

Project

Lake Charles Gasification Facility will convert approximately 7400 tons per day of petroleum coke to 120 MM scf/day of SNG and 2000 tons per day of sulfuric acid. Other secondary products from the facility will include argon, carbon dioxide, slag, and electricity for internal use.

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Petroleum coke from the Port of Lake Charles will be received and fed to five gasifiers to produce syngas which will be quenched, purified, gasification shifted, and then converted to SNG. A portion (~ 75%) of the purified syngas will be sent to the shift conversion reactors, where carbon monoxide reacts with water vapor to produce carbon dioxide and hydrogen. The stream will be mixed with the other portion (~ 25%) of syngas. The mixture will be fed to the methanation process to produce SNG. Excess carbon dioxide will be collected for enhanced oil recovery (EOR) or sent to the thermal oxidizer to destroy any residual carbon monoxide, hydrogen sulfide, carbonyl sulfide, and methanol.

Sour gas will be removed from the syngas by methanol absorption at low temperature and high pressure (Lurgi Rectisol Selective Acid Gas Removal). Methanol will be regenerated for reuse. Sour gas will be incinerated at the sulfuric acid plants to produce sulfur dioxide which will be converted to sulfur.trioxide and then sulfuric acid.

To provide oxygen for the quench gasifiers and the coke/fluxant slurry, Lake Charles cogeneration will operate two air separation units. Argon will be collected as a byproduct of the units and will be sold. Heat released from various sections of the facility will be recovered to produce steam for electric generator steam turbines.

Proposed Permit

This permit (Permit 0520-00411-V0) is a preconstruction and operating permit for the proposed Lake Charles Gasification Facility.

Permitted Air Emissions (tons/year)

Pollutant	Emissions
PM/PM_{10}	33.38
SO_2	262.27
NO_X	218.76
CO	701.00
VOC	24.69
H_2SO_4	55.83
H_2S	0.86
NH_3	0.49

IV REGULATORY ANALYSIS

The applicability of the appropriate standards is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

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Applicability and Exemptions of Selected Subject Items

The explanations for the non-applicability and exemptions of selected subject items are listed in Table XI of the proposed permit.

Prevention of Significant Deterioration/Nonattainment Review

Carbon monoxide (CO), nitrogen oxides (NO_X), and sulfur dioxide (SO_2) emissions from the proposed Lake Charles Gasification Facility will be more than the PSD major source threshold. Emissions of particulate matter (PM/PM_{10}) and sulfuric acid will be more than their respective PSD significance levels. A PSD analysis was performed for PM/PM_{10}, SO_2, NO_X, CO, and sulfuric acid emissions and is documented in the Permit PSD-LA-742. Requirements of PSD-LA-742 are incorporated into this permit.

PM/PM_{10}, SO_2, NO_X, CO, and H_2SO_4 emissions from the affected equipment, such as, heaters, boilers, thermal oxidizer, flares, tanks, materials storage and handling, fugitives, and other associated equipment will be controlled by Best Available Control Technologies (BACT). Screen dispersion modeling indicated that PM/PM_{10}, SO_2, NO_X, and CO emissions from the proposed facility will be below the PSD significant impact levels and monitoring exemption levels. Preconstruction monitoring, refined modeling, and incremental modeling are not required. Soils, vegetation, and visibility will not be adversely impacted by the proposed project, nor will any Class I area be affected. The project will not result in any significant secondary growth effects.

Streamlined Equipment Leak Monitoring Program

The permit does not include any Streamlined Equipment Leak Monitoring Program.

MACT Requirements

The facility is a major source of Toxic Air Pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. The facility does not emit Class I or II TAP above the Minimum Emission Rates (MER). MACT is not required. Lake Charles Cogeneration, LLC will equip all generators and firewater pumps with 40 CFR 63 Subpart ZZZZ certified engines.

Air Quality Analysis

Screen dispersion modeling indicated that PM/PM_{10}, SO_2, NO_X, CO, and H_2SO_4 emissions from the proposed facility will not cause or contribute to any National Ambient Air Quality Standards (NAAQS) or Louisiana Ambient Air Standards (AAS) exceedances.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

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Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

This permit does not contain any permit shield.

VI. PERIODIC MONITORING

To demonstrate compliance with applicable standards, nitrogen oxides (NO_X) emissions from the boiler and steam superheater will be monitor continuously as required by 40 CFR 60 Subpart Db. Operations of the wet electrostatic precipitators (WESP) and the hydrogen peroxide scrubbers at the Wet Sulfuric Acid Plants will be monitored as required by 40 CFR Part 64. Particulate emissions from dust filters will be periodically checked. The flare will also be monitored for the presence of a flame and heat content of the flared gas.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_X) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.